Version with markings to show changes made:

In the specification:

Page 2, line 26, through page 5, line 7:

SUMMARY OF THE INVENTION

[In view of the above, it is an object of the present invention to provide a motor with dynamic pressure bearing that can isolate a dynamic pressure bearing section from leak magnetic fluxes of thrust bearings and prevent damage and scratches on surfaces of a fixed shaft and a bearing sleeve.

To achieve the object described above, a]In accordance with one embodiment, a motor that includes a radial pressure bearing section, a thrust magnet unit, and a magnetic shield device. The radial pressure bearing section is between a rotor and a stator. The thrust magnet unit is formed on the rotor and the stator. The magnetic shield device is provided between the thrust magnet unit and the radial dynamic pressure bearing section for isolating the radial dynamic pressure bearing section from a leak magnetic flux of the thrust magnet unit.

In accordance with another embodiment, a motor [with dynamic pressure bearings in accordance with one embodiment of the present invention comprises]that includes a radial dynamic pressure bearing section, a thrust magnet [section]unit for [magnetically]magnetic support of a rotor with respect to a stator, and a magnetic shield device provided between the thrust magnet [section]unit and the radial dynamic pressure bearing section for isolating the radial dynamic pressure bearing section from a leak magnetic flux of the thrust magnet [section]unit.

In accordance with [one]another embodiment, a motor with dynamic pressure bearings [has]that includes a rotor[unit], a stator[unit], and a radial dynamic pressure bearing section having opposing radial dynamic pressure surfaces that are formed on the rotor [unit]and the stator[unit]. As the rotor [unit]is rotated, a dynamic pressure is generated in a lubrication fluid [filled in a gap]between the

radial dynamic pressure surfaces to thereby rotatably support the rotor [unit in a radial direction thereof with]respect to the stator. Thrust magnets are mounted on the rotor [unit]and the stator [unit]in a manner to oppose to [one]each another for generating a magnetic action to levitate the rotor in an axial direction thereof and rotatably support the rotor in a thrust direction thereof with respect to the stator. A magnetic shield device is provided between the thrust magnets and the radial dynamic pressure bearing section for isolating the radial dynamic pressure bearing section from a leak magnetic flux of the thrust magnets.

By isolating the leak magnetic flux from the thrust magnets by the magnetic shield device, the magnetic flux is prevented from leaking into the radial dynamic pressure bearing section, and therefore an undesired attraction magnetic field is prevented from being formed within the radial dynamic pressure bearing section. As a result, foreign matters, that may exist outside the radial dynamic pressure bearing section, can be prevented from being attracted to the radial dynamic pressure bearing section.

The magnetic shield device may be formed [form]from a magnetic absorbing member that absorbs the leak magnetic flux from the thrust magnetic bearings. The magnetic absorbing member may be formed from a yolk member having a magnetic permeability greater than a magnetic permeability of a mounting member on which the thrust magnets are mounted. Also, the magnetic shield device may be formed from an insertion member that spaces a distance between the thrust magnets and the radial dynamic pressure bearing section.

Also, in accordance with the present invention, the thrust magnets may be disposed inside the radial dynamic pressure bearing section in the radial direction, and the magnetic shield device may be disposed between the thrust magnets and the radial dynamic pressure bearing section in the radial direction. As a result, the bearing apparatus can be reduced in size, and the magnetic flux of the thrust magnets is prevented from leaking into the radial dynamic pressure bearing

section, and an unnecessary attracting magnetic flux is prevented from being formed within the radial dynamic pressure bearing section.

In accordance with one embodiment of the present invention, the stator may include a fixed shaft, the rotor may be disposed about an outer periphery of the fixed shaft, and a bearing sleeve that forms the radial dynamic pressure bearing section may be disposed between the fixed shaft and the rotor. The thrust magnets may be mounted inside the fixed shaft and inside the radial dynamic pressure bearing section in the radial direction. As a result, when a thrust magnet bearing [section]unit of the thrust magnets and the radial dynamic pressure bearing section may be overlapped in the axial direction to reduce the measurements of the motor in the radial direction, the magnetic flux is prevented from leaking into the radial dynamic pressure bearing section, and an unnecessary attracting magnetic flux is prevented from being formed within the radial dynamic pressure bearing section.

Other features and advantages of the invention will be apparent from the following detailed description, taken in conjunction with the accompanying drawings that illustrate, by way of example, various features of embodiments of the invention.

Page 6, lines 11-22:

A base member of the fixed shaft 21 is formed from an aluminum material such as aluminum or an aluminum alloy. A lubricating resin coating is formed over an external surface of the fixed shaft 21 by an electrodeposition [paining]painting method or the like to define a radical dynamic pressure bearing surface. For example, herringbone radial dynamic pressure generation grooves (not shown) that are divided in two blocks in the axial direction are formed on the external peripheral surface of the fixed shaft 21 coated with the lubricating resin coating to thereby form a dynamic pressure bearing section on the side of the fixed shaft 21. A bearing sleeve 31 of the rotor assembly 30 is rotatably disposed outside of the fixed shaft 21 having the dynamic pressure generation grooves. The bearing sleeve 31 is

separated from the fixed shaft 21 by several [μm]micrometers to several [tenμm]tens of micrometers.

Page 10, lines 1-14:

[By]Since the motor [with]has dynamic pressure bearings having the structure described above in accordance with the present embodiment, the radial dynamic pressure bearing surface that is located outside the fixed-side thrust magnets 25 is isolated from the leak magnetic flux Φ of the fixed-side thrust magnets 25 by the magnetic shield that is formed from the ring-shaped yolk member 27 even when the motor with dynamic pressure bearings is reduced in size in the axial direction and/or the radial direction. As a result, the magnetic flux is prevented from leaking into the dynamic pressure bearing section, and an unnecessary magnetic field is not formed within the dynamic pressure bearing section. Therefore, foreign matters, which may exist outside the dynamic pressure bearing section, are not attracted to the inside of the dynamic pressure bearing section. Surfaces of the fixed shaft 21 and the bearing sleeve 31 are prevented from damages and scrapes when the motor is rotated.

Page 11, line 28, to page 12, line 13:

[By]Since the motors [with]have dynamic pressure bearings in accordance with the present invention described above, [a]leak magnetic flux from the thrust magnets is isolated by a magnetic shield device such as a magnetic absorption member or an insertion member such as a yolk member. As a result, [he]the magnetic flux is prevented from leaking into a radical dynamic pressure bearing section, and therefore an undesired attraction magnetic field is prevented from being formed within the radial dynamic pressure bearing section. Therefore, foreign matters, which may exist outside the dynamic pressure bearing section, do not enter the dynamic pressure bearing section or adhere to surfaces inside of the dynamic pressure bearing section. As a result, surfaces of the shaft member and

the bearing member are prevented from damages and scrapes when the motor is rotating. Accordingly, very reliable motors with dynamic pressure bearings that have a long service life can be obtained with a relatively simple mechanical structure.

Page 1, lines 1-14:

ABSTRACT

A motor [with dynamic pressure bearing has a radial dynamic pressure bearing section in which opposing radial dynamic pressure surfaces are formed on a rotor and a stator such that a dynamic pressure is generated in a lubrication fluid between the radial dynamic pressure surfaces to thereby rotatably support the rotor in a radial direction thereof with respect to the stator. The motor has thrust magnets mounted on the rotor and the stator in a manner to oppose to one another for generating a magnetic action to levitate the rotor in an axial direction thereof and rotatably support the rotor in a thrust direction thereof with respect to the stator. A magnetic shield device is provided between the thrust magnets and the radial dynamic pressure bearing section for isolating the radial dynamic pressure bearing section from a leak magnetic flux of the thrust magnets.]that includes a radial pressure section, a thrust magnet unit, and a magnetic shield device. The radial pressure bearing section is between a rotor and a stator. The thrust magnet unit is formed on the rotor and the stator. The magnetic shield device is provided between the thrust magnet unit and the radial dynamic pressure bearing section for isolating the radial dynamic pressure bearing section from a leak magnetic flux of the thrust magnet unit.

In the claims:

2. (Amended) A motor according to claim 1, wherein the magnetic shield device is formed [form]from a magnetic absorbing member that absorbs the leak magnetic flux from the thrust [magnetic bearings]magnets.

10. (Amended) A motor according to claim 9, wherein the magnetic shield device is formed [form]from a magnetic absorbing member that absorbs the leak magnetic flux from the thrust [magnetic bearing]magnet unit.